

WATER TREATMENT EQUIPMENT AND SERVICES IN UKRAINE

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SUMMARY: This report analyzes Ukrainian water treatment systems and services in the following areas:

- * municipal water treatment facilities
- * industrial water pollution control facilities
- * domestic water filtration systems

The water services market is not yet developed in Ukraine. The public water supply infrastructure and managing enterprises are predominantly owned by municipalities. The public water supply and sewage services are centralized and discharged by municipally owned enterprises, called Vodokanal.

Ukraine faces a serious water quality challenge. Almost half of the water discharged into the surface water systems is poorly treated or non-treated at all. As of today, surface water sources are ranked second and third level in purity (contaminated and unsuitable for drinking water supply.) Similarly, ground water sources have become polluted with agricultural chemicals.

In most instances surface water, used as a drinking water supply, undergoes a range of conventional treatments, including coagulation with aluminum sulfate, sedimentation, rapid sand filtration and chlorine disinfecting.

Ukraine however lacks a serious national water treatment program. Legislative acts have been adopted for environmental protection. Unfortunately, most of these acts are declarative, and lack proper implementation mechanisms.

A. MARKET HIGHLIGHTS AND BEST PROSPECTS

1. Market Profile

Although significant, the water treatment systems and the water quality services market in Ukraine, cannot be calculated using traditional methods. Market size analysis is complicated by the difficulty in obtaining exact statistical data from Ukrainian institutions.

Virtually all municipal water treatment facilities and industrial pre-treatment systems are in need of replacement and renovation.

The majority of the Ukrainian industrial enterprises are also in a desperate need of reconstruction and the installation of water pollution control systems. Production, installation and distribution of pollution control systems are needed.

Significant strategic opportunities exist for U.S. companies in this emerging market, which should however, be studied on a case-by-case basis.

a) Municipal Water Treatment Facilities

Currently, municipal water treatment facilities in Ukraine are essentially deteriorating. The effectiveness of municipal sewage treatment systems is low, due in part to high inorganic loads accumulating.

Ukrainian wastewater treatment facilities are identified with the following problems, regarding the treatment processes and sludge disposal:

1. inadequate or outdated technology along with a lack of anaerobic sludge digestion plants;
2. poor technology for the mechanical de-watering process;
3. difficulties in finding solutions for sludge disposal.

In short, the reorganization of municipal water treatment facilities requires new water treatment technologies.

Existing chlorine-based treatment methods are not only ineffective, but also hazardous. The monitoring of chlorine residual levels is carried out by manual sampling and analyzed in plant laboratories. No water treatment plant is equipped with adequate and necessary instrumentation. There is a desperate need for on-line organic pollution monitors, chlorine residual analyzers and controllers.

b) Industrial Water Pollution Control Facilities

Treatment facilities at industrial plants are working beyond capacity, resulting in the discharge of untreated water into rivers. While some industries have attempted to re-circulate water, considerable wastewater volumes are still being discharged. Most industrial plants lack proper pretreatment capabilities.

c) Domestic Water Filtration Systems

The demand for drinking water is evidenced by a strong sales of bottled water, and the growing demand for domestic water purification systems and filters. The annual sales of domestic water purification systems and water filters in Ukraine (in retail prices) for the year 2000 amounted to USD 12 million. Local production is only now emerging in Ukraine, 99 percent of the market consists of imported products.

2. System of Management and Environmental Protection Legislation

The Water Code of Ukraine, dated June 6, 1995, is the principal legislative act governing all water-related issues in Ukraine. The Water Code provides the state authorities entitled to regulate and exercise control over the use of water resources in Ukraine. These include:

- Verkhovna Rada (Parliament of Ukraine) and local councils of people's deputies;
- Cabinet of Ministers of Ukraine or any of its agencies, including Ministry of Ecology and Natural Resources of Ukraine and the State Committee for Water Resources of Ukraine;
- Local authorities.

Regulatory activities of the Ministry and the State Committee include the setting of environmental standards, a permitting process for stationary pollution sources, monitoring and enforcement of activities, the establishment of a pollution fee system, and an environmental impact audit review of new investments.

3. Best Sales Prospects

U.S. companies will find opportunities related to long-term environmental impacts within municipal projects. The most realistic opportunities include:

- * safety improvements/modifications at industrial and municipal facilities;
- * water conservation projects;
- * filtration efficiency improvements;
- * effluent reduction attempts;
- * environmental concerns in areas of economic and tourist value.

The effectiveness of water and wastewater treatment facilities can be improved through the introduction of anaerobic digestion

processes, including the use of methane, produced by an electricity generating process. Mechanical de-watering of sludge could reduce waste volume by approximately 50%. In addition, most water treatment facilities would benefit greatly from water leakage control programs. Presently, water loss from the distribution system needs to be controlled.

The installation of monitoring and laboratory equipment needed to conduct accurate surveys of Ukrainian water quality may provide U.S. firms with a unique opportunity. Furthermore, the introduction of a modern information management systems would make sharing of water quality information easier.

B. COMPETITIVE ANALYSIS

1. Local Production of Municipal Wastewater Treatment Systems

There are a total of eight manufacturing facilities, which are located in the cities of Dnipropetrovsk, Kharkiv, Kiev, Mykolayiv, Odesa and Rivne. However, local production has largely ceased due to the lack of available funding for the products manufactured.

To date, the locally-produced municipal filtration systems have been based on a chlorine and aluminum sulfate process and only used for the disinfecting of drinking water. The chlorine-based technology is very conservative and even considered dangerous in radiation contaminated zones; organic and inorganic substances as well as radio-nuclides cannot be eliminated from the water using this technology.

Low sensitivity and reduced effectiveness of locally-produced monitoring equipment is unfortunately compounded by monitoring of surface water by traditional physical and chemical analysis. Chlorine residual levels are monitored by manual sampling, with the analysis of samples completed in plant laboratories. These methods should be expanded to include biological indicators and the collection of biological material for analysis of inorganic and organic micro-pollutants.

2. Local Production of Industrial Wastewater Pretreatment and Treatment Systems

Production of industrial wastewater pretreatment and treatment systems in Ukraine is coordinated by Ukrainian Ecology Control Institutions and the Vodokanals (municipal water and wastewater enterprises). Regulations prescribing wastewater pretreatment by industrial enterprises in Ukraine are based on the findings of

the Sanitary Epidemiological Station (SES), which is under the jurisdiction of the Ukrainian Ministry of Health. Each body of water (i.e., the Dniro River and the Black Sea) is subject to individually-defined water quality regulations. The SES regularly samples and analyzes water to determine the composition of pollutants and compares the results to set standards for that body of water.

Although the Vodokanal's, municipal water and wastewater enterprises, theoretically prescribe the kind of treatment each plant needs to provide, the Ukrainian government does not provide equipment for industrial water pollution control. Enterprises or their parent ministry typically manufacture their own customized equipment for industry needs.

Ukrainian research institutes and independent scientific firms have developed projects for improving industrial wastewater purification systems. Unfortunately, due to the lack of funding, many industrial enterprises cannot afford to participate in these projects.

3. Local Production of Domestic Water Filters

As local production is only emerging in Ukraine, imported products dominate in the market. Market operators estimate the annual sales of domestic water purification systems and water filters in Ukraine (in retail prices) in 2000 at USD 12 million.

Drinking water quality as supplied from municipal and communal systems in Ukraine is of poor or inadequate quality. Industrial, sewage and herbicide/pesticide contaminants are problems in many areas. Many municipal distribution systems are corroded and leaky. This results in the leaching of contaminants into distribution system on their way to consumers. The demand for better water is evidenced by a strong sales of bottled water to the population, and the increasing demand for domestic water purification systems and water filters.

4. Third-Country Participation

Foreign companies are active in the supply of wastewater pipes, polymer piping systems for water supply, internal and external sewage, drainage, as well as isolated systems for drain water filtration and drainage systems.

Companies that import this equipment are:

1. Dutch concern Wavin;
2. German companies Wilo GmbH, Grundfos Pumpen Vertrieb GmbH;
3. Polish companies Genova System, Leszczynska Fabryka Pomp,

- Kaczmarek, Emitter;
4. Italian company Prandelli.

Third-country companies participating in long-term projects in Ukraine include:

1. French company Suez Lyonnaise des Eaux- announced its participation in a tender for the reconstruction of the Odesa water supply system. The aim of the reconstruction is to eliminate losses in the city's water supply network, which can reach as high as 45%.

Imported products predominate in the Ukrainian market for domestic water purification systems and water filters. The most popular brands of domestic water treatment systems are

1. (Germany) Brita ,
2. (USA), Instapure, Ametek, Installine
3. (Russia). Barrier, Aquafor

Currently, there are ten to twelve major Ukrainian importers of water filters and various domestic water treatment systems of Russian, European, U.S. and Asian origin. There are approximately 40 to 50 regional dealers and wholesalers in the market. The retail network of specialized stores (or specialized departments in the department stores and supermarkets) is only now developing.

5. U.S. Market Position

During the past few years, U.S. exporters of water treatment systems have become more active and evident in the Ukrainian market. Some of these companies have participated in trade programs, investment projects, and have exhibited at Ukrainian trade shows. Exporters of domestic water filters and water supply systems have also expanded penetration into the Ukrainian market.

a. Since 1992, the Ukrainian - American joint venture NTT (based in Kyiv) has been an exclusive distributor in Ukraine of Ametek, the U.S. firm, which manufactures a wide range of industrial and domestic water filters. Due to reasonable pricing and quality products, Ametek's products have gained popularity among wholesale and retail buyers. NTT has a well-developed network of retail outlets - 9 in Kyiv. NTT not only distributes filters, but it also provides consulting on water quality and on the selection of proper water treatment. NTT is also a producer of domestic water filters under the brand name "Vodogray". The spare parts for "Vodogray" are imported from the U.S.

b. The U.S. company Culligan, one of the world leaders in the water treatment technologies, is represented in Ukraine by the company Fiticon. Fiticon distributes and installs Culligan's water purification systems - both for industrial and household use.

c. Hydrotekhnika (Kyiv), a joint stock company, provides production, installation and follow-up service of domestic water treatment and supply systems and fittings imported from the USA.

d. Small Ukrainian scientific consortiums have contacted U.S. suppliers of industrial pollution control system parts (pipes, pumps, centrifuges, valves, fittings, etc.). The exported parts are assembled locally and installed under contract between the scientific enterprise and the industrial customer. These exports are sporadic and are difficult to document and track.

C. END-USER ANALYSIS

There is immense public pressure in Ukraine today to clean up the environment. Environmental groups have found a voice in the political arena and a corresponding influence on public policy. The disastrous health effects of water pollution are being felt in many areas of Ukraine.

At the same time, industries are facing tough economic times. The advent of self-accounting is forcing industries to earn a profit, to account for usage of budgeted funds, and to streamline production. Plant directors and managers with authority to install treatment equipment are often unwilling to risk a decrease in productivity and drain scarce capital by investing in something with no perceived short-term economic benefits. Even the largest and most profitable enterprises often insist that they cannot afford to install, operate, or maintain treatment equipment. Enterprises often must pay stiff fines, but these enterprises typically prefer to pay environmental fines rather than buy expensive wastewater control equipment.

In the near future, projects for the reconstruction of municipal wastewater treatment equipment may appear more attractive for investment. The World Bank has listed the following cities as needing modest water or wastewater treatment investments:

Top priority:

Zaporizhzhya, Odesa, Mariupol, Dnipropetrovsk/Kamiansk, Sevastopol, Kryvyi Rih, Lysychansk-Rubizhne (Luhansk Oblast).

Second tier priority:

Kharkiv, Kiev, Yalta (because of its tourism potential).

However, due to a lack of international financing and funding for municipal projects from the Ukrainian Government, business opportunities for U.S. firms are still limited at the present time. Interested U.S. exporters, contractors, and consultants are advised to contact international financial institutions for information on upcoming projects in this field.

U.S. firms may also consider focusing their attention on export and investment opportunities in coastal cities (e.g., Mariupol, Berdiansk, Yalta, Sevastopol, and Odesa). Eutrophication and micro-biological pollution have resulted in a decrease in the tourism potential of these coastal areas due to unpleasant water conditions on popular beaches and outbreaks of salmonella and enteric viruses at bathing resorts. A particularly serious situation exists near Odesa, where several beaches are routinely closed during summer.

General consumers of domestic and office water filters are becoming a more a viable part of the Ukrainian market. The demand for domestic filters and independent water supply systems with disinfecting functions is growing every year. Most modern projects dealing with the construction of cottages and residential buildings require the installation of modernized water supply systems, including water filtration. It is advisable that U.S. exporters contact Ukrainian construction companies directly with business proposals.

D. MARKET ACCESS

1. Import Climate

Water filters and water treatment equipment are exempted from excise taxes and import licensing. Electrical water filtering treatment and control systems are subject to import certification in Ukraine.

Ukraine's water sector's infrastructure and the respective managing enterprises (Vodokanals) are predominantly owned by municipalities. Although no restrictions exist on access of any new entrants, not one private company has attempted to compete with the Vodokanal for the right to provide services. Moreover, by controlling both water supply and sewage system, Vodokanal is effectively a monopolist in the sector. On the other hand, communal services have traditionally been low-priced in Ukraine, and thus the low profitability of Vodokanal may be one of the reasons why no private company has tried to engage in the sector.

But despite the lack of precedents in the sector (except for EBRD's and World Bank's financing described below), the Ukrainian municipal authorities are likely to attract investment for the development of infrastructure in the near future.

2. Financing

External assistance, whether through bilateral or multilateral grants and loans, is likely to play only a part in achieving the needed environmental improvements in Ukraine. On the other hand, early assistance could be instrumental in supporting the start-up of pilot programs and modest investment.

During the next CAS (Country Assistance Strategy) period (started in August 2000) the World Bank will aim to help the government of Ukraine develop the legal and institutional framework for environmental regulation; improve the capacity of the Ministry of Environment and related agencies; and efficiently prepare and implement larger environmental investment projects in the clean air pollution, protection of bio-diversity and improvement of land, water, and solid waste management.

2. Description of Projects:

EBRD Projects

Zaporizhzhia Water Utility Development and Investment Program

An EBRD loan of USD 28 million was extended in May 1999 to Vodokanal, the municipal water and wastewater enterprise in Zaporizhzhia, to help reduce pollution in the Dnieper River. The project will finance critical investments in the water supply and wastewater sector and will enhance the financial and operational performance of Vodokanal. The financing will improve the efficiency and quality of water and wastewater services, bringing cleaner and safer water to the citizens of southern Ukraine. In January 2001, an EBRD tender was announced for the supply of electric pumps, motors, automatic monitoring and control systems for water and wastewater systems of Zaporizhzhia.

Sevastopol Water and Wastewater Services Improvement Program

The program, planned for signing in 2001, envisages an EBRD senior loan of 14 million to Sevastopol Vodokanal, as part of a USD 28 million project co-financed by Sevastopol Vodokanal, the city of Sevastopol and other donors. The project will enhance the financial and operational performance of Vodokanal and

finance critical water and waste water networks rehabilitation and completion of city's main waste water treatment plant to introduce biological treatment.

Municipal Utilities Development Program

A program comprising six to eight EUR 5-10 million loans to municipal water utilities (Vodokanal's) is under bank's review. Total investments under the Program are envisaged to be EUR 80 million. The Program is expected co-financed by the participating utilities and cities, the government of Ukraine and various donors.

World Bank Projects

Lviv Water Project

A USD 40 million project covers major reconstruction and installation of modern water treatment facilities in Lviv. In May 2001 the World Bank approved a loan of USD 24 million. USD 6 million should be allocated by the Swedish International Development Agency as a grant, and USD 10 million by local governmental bodies.